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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	1	Of	8

COMPLETE IF KNOWN	
Applicati n Number	10/078,473
Filing Dat	2-21-02
First Named Inventor	Ho Ki Kwon
Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No[1]	Document Number: Number	Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
DW		US 4445218		04-24-1984	Coldren	
		US 4608697		08-26-1986	Coldren	
		US 4622672		11-11-1986	Coldren et al.	
		US 4829347		05-09-1989	Cheng et al.	
		US 4873696		10-10-1989	Coldren et al.	
		US 4896325		01-23-1990	Coldren	
		US 5045499		09-03-1991	Nishizawa et al.	
		US 5082799	A	01-21-1992	Holmstrom et al.	
		US 5245622	A	09-14-1993	Jewell et al.	
		US 5251225	A	10-05-1993	Eglash et al.	
		US 5293392	A	03-08-1994	Shieh et al.	
		US 5343487	A	08-30-1994	Scott et al.	
		US 5358880	A	10-25-1994	Lebby et al.	
		US 5365540	A	11-15-1994	Yamanaka	
		US 5392307	A	02-21-1995	Sugiyama et al.	
		US 5416044	A	05-16-1995	Chino et al.	
		US 5422901	A	06-06-1995	Lebby et al.	
		US 5468343	A	11-21-1995	Kitano	
		US 5491710	A	02-13-1996	Lo	
		US 5513204	A	04-30-1996	Jayaraman	
		US 5568504	A	10-22-1996	Kock et al.	
		US 5588995	A	12-31-1996	Sheldon	
		US 5631472	A	05-20-1997	Cunningham et al.	
		US 5693180	A	12-02-1997	Furukawa et al.	
		US 5719891	A	02-17-1998	Jewell	
		US 5719894	A	02-17-1998	Jewell et al.	

Examiner Signature		Date Considered	06/07/04

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	2	Of	8

COMPLETE IF KNOWN	
Application Numb r	10/078,473
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

PW		US	5719895	A	02-17-1998	Jewell et al.
		US	5729567	A	03-17-1998	Nakagawa
		US	5732103	A	03-24-1998	Ramdani et al.
		US	5747366	A	05-05-1998	Brillouet et.al.
		US	5754578	A	05-19-1998	Jayaraman
		US	5757833	A	05-26-1998	Arakawa et al.
		US	5805624	A	09-08-1998	Yang et al.
		US	5809051	A	09-15-1998	Oudar
		US	5815524	A	09-29-1998	Ramdani et al.
		US	5818862	A	10-06-1998	Salet
		US	5818863	A	10-6-1998	Nabet et al.
		US	5825796	A	10-20-1998	Jewell et al.
		US	5835521	A	11-10-1998	Ramdani et al.
		US	5877038	A	03-02-1999	Coldren et al.
		US	5883912	A	03-16-1999	Ramdani et al.
		US	5898722	A	04-27-1999	Ramdani et al.
		US	5903586	A	05-11-1999	Ramdani et al.
		US	5912913	A	06-15-1999	Kondow et al.
		US	5943357	A	08-24-1999	Lebby et al.
		US	5943359	A	08-24-1999	Ramdani et al.
		US	5956363	A	09-21-1999	Lebby et al.
		US	5960018	A	09-28-1999	Jewell et al.
		US	5974073	A	10-26-1999	Canard et al.
		US	5978398	A	11-02-1999	Ramdani et al.
		US	5985683	A	11-16-1999	Jewell
		US	5991326	A	11-23-1999	Yuen et al.
		US	6021147	A	02-01-2000	Jiang et al.
		US	6046065	A	04-04-2000	Goldstein et al.
		US	6049556	A	04-11-2000	Sato
		US	6052398	A	04-18-2000	Brillouet et al.
		US	6057560	A	05-02-2000	Uchida
		US	6061380	A	05-09-2000	Jiang et al.

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Sheet	3	Of	8

COMPLETE IF KNOWN	
Application Numb r	10/078,473
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

DW		US	6061381	A	05-09-2000	Adams et al.
		US	6121068	A	09-19-2000	Ramdani et al.
		US	6127200	A	10-03-2000	Ohiso et al.
		US	6148016	A	11-14-2000	Hegblom et al.
		US	6195485	B1	02-27-2001	Coldren et al.
		US	6207973	B1	03-27-2001	Sato et al.
		US	6226349	B2	04-25-2003	Cox et al.
		US	6252896	B1	06-26-2001	Tan et al.
		US	6314118	B1	11-06-2001	Jayaraman et al.
		US	6341137	B1	01-22-2002	Jayaraman et al.
		US	6359920	B1	03-19-2002	Jewell et al.
		US	6362069	B1	03-26-2002	Forrest et al.
		US	6366597	B1	04-02-2002	Yuen et al.
		US	6372533	B2	04-16-2002	Jayaraman et al.
		US	6424669	B1	07-23-2002	Jiang et al.
		US	6434180	B1	08-13-2002	Cunningham
		US	6542530	B1	04-01-2003	Shieh et al.
		US	6546031	B1	04-08-2003	Jewell et al.
		US	6566688	B1	04-20-2003	Zhang et al.
		US	6556602	B2	04-29-2003	Rice et al.
		US	6580741	B2	06-17-2003	Jiang et al.
		US	6603784	B1	08-05-2003	Johnson
		US	6621842	B1	09-16-2003	Dapkus
		US	6621843	B2	09-16-2003	Yoo et al.
		US	6628685	B1	09-30-2003	Chan-Long Shieh
		US	6642070	B2	11-14-2003	Jiang et al.
		US	6653158	B2	11-25-2003	Hall et al.
		US	2002/0067748	A1	06-06-2002	Coldren et al.
		US	2002/0071464	A1	06-13-2002	Coldren et al.
		US	2002/0075920	A1	06-20-2002	Spruytte et al.
		US	2002/0071471	A1	06-13-2002	Kim et al.
		US	2002/0075929	A1	06-20-2002	Cunningham
		US	2002/0090016	A1	07-11-2002	Coldren et al.
		US	2002/0131462	A1	09-19-2002	Line et al.
		US	2003/0086463	A1	05-08-2003	Shin et al.
		US	2003/0053510	A1	03-20-2003	Yuen et al.
		US	2003/0103543	A1	06-05-2003	Moser et al.
V		US	2003/0118067	A1	06-26-2003	Johnson

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DW		US 2003/0118068	A1	06-26-2003	Johnson	
		US 2003/0118069	A1	06-26-2003	Johnson	
		US 2003/0123501	A1	07-03-2003	Johnson	
		US 2003/0123511	A1	07-03-2003	Johnson	
		US 2003/0134448	A1	07-17-2003	Ju et al.	
		US 2003/0156610	A1	08-21-2003	Kwon	
		US 2003/0156611	A1	2-21-2003	Kwon	
		US 2003/0156616	A1	08-21-2003	Kwon	
		US 2003/0157739	A1	08-21-2003	Jiang et al.	
		US 2003/0231680	A1	12-18-2003	Dariusz Burak	

Examiner Signature		Date Considered	06/07/04

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	4	Of	8

COMPLETE IF KNOWN	
Application Number	10/078,473
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No[1]	Foreign Patent Document: Country Code[3]	Number[4]	Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[6]
DW		EP	0 740 377	A1	10-30-1996	Hewlett-Packard Company		
		EP	0 740 377	B	10-30-1996	Hewlett-Packard Company		
		EP	0 765 014	A1	03-26-1997	France Telecom		
		EP	0 765 014	B1	07-28-1999	France Telecom		
		EP	0 822 630	A1	02-04-1998	Hewlett-Packard Company		
		EP	0 874 428	A2	10-28-1998	Motorola, Inc.		
		EP	0 874 428	A3	11-04-1998	Motorola, Inc.		
		EP	0 874 428	B1	15-04-1998	Motorola, Inc.		
		EP	0 975 073	A1	01-26-2000	NEC Corporation		
		EP	0 999 621	B1	11-04-1999	Jayaraman et al.		
		EP	1 294 063	A1	03-19-2003	Avalon Photonics AG		
		JP	57026492	A	02-12-1982	NEC Corp.		
		WO	98/007218	A1	02-19-1998	W.L. Gore & Associates, Inc.		
		WO	00/033433	A2	06-08-2000	Arizona Board of Regents		
		WO	00/033433	A3	06-08-2000	Arizona Board of Regents		
		WO	00/038287	A1	06-29-2000	Honeywell, Inc.		
		WO	00/052789	A2	02-29-2000	The Regents of the University of California		
		WO	00/052789	A3	02-29-2000	The Regents of the University of California		
		WO	00/065700	A2	11-02-2000	Gore Enterprise Holdings, Inc.		
		WO	00/065700	A3	11-02-2000	Gore Enterprise Holdings, Inc.		
		WO	01/016642	A2	03-08-2001	Agility Communications		
		WO	01/016642	A3	03-08-2001	Agility Communications		
		WO	01/017076	A2	03-08-2001	The Regents of the University of California		

Examiner Signature		Date Considered	05/07/04

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Sheet	5	Of	8

COMPLETE IF KNOWN	
Applicati n Number	10/078,473
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

DW		WO	01/017076	A3	03-08-2001	The Regents of the University of California		
		WO	01/018919	A1	03-15-2001	The Regents of the University of California		
		WO	01/024328	A2	04-05-2001	Agility Communications		
		WO	01/024328	A3	04-05-2001	Agility Communications		
		WO	01/033677	A2	05-10-2001	Arizona Board of Regents		
		WO	01/033677	A3	05-10-2001	Arizona Board of Regents		
		WO	01/052373	A2	07-19-2001	Infineon Technologies Ag		
		WO	01/052373	A3	07-19-2001	Infineon Technologies Ag		
		WO	01/084682	A2	11-08-2001	Agility Communications, Inc.		
		WO	01/093387	A2	12-06-2001	Sandia Corporation		
		WO	01/093387	A3	12-06-2001	Sandia Corporation		
		WO	01/095444	A2	12-13-2001	Agility Communications, Inc.		
		WO	01/098756	A2	12-27-2001	The Regents of the University of California		
		WO	02/003515	A2	01-10-2002	Agility Communications, Inc.		
		WO	02/017445	A1	02-28-2002	The Regents of the University of California		
		WO	02/084829	A1	10-24-2002	Cielo Communications, Inc.		
		WO	03/052797	A1	06-26-2003	Jiang et al.		

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
DW		AKIYAMA, Y., et al., "Growth of High Quality GaAs Layers on Si Substrates by Mocvd". 1986, Journal of Crystal Growth, pp. 490-497.	
		ALMUNEAU, G., et al., "Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy", article, May 6, 1999, pgs 113-6, Vol. 208, Journal of Crystal Growth.	
		ALMUNEAU, G., et al., "Improved electrical and thermal properties of InP-AlGaAsSb Bragg mirrors for long-wavelength vertical-cavity lasers", article, Oct 2000, pgs 1322-4, Vol. 12, No. 10, IEEE Photonics Technology Letters.	
		ALMUNEAU, G., et al., "Molecular beam epitaxial growth of monolithic 1.55 μm vertical cavity surface emitting lasers with AlGaAsSb/AlAsSb Bragg mirrors", article, May/Jun 2000, pgs 1601-4, Vol. 8, No. 3, Journal of Vacuum Science Technology.	
		ANAN, T., et al., "Continuous-wave operation of 1.30 μm GaAsSb/GaAs VCSELs", article, Apr 26, 2001, pgs 566-7, Vol. 37, No. 9; Electronics Letters.	

Examiner Signature		Date Considered	06/07/04

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Sheet	6	Of	8

COMPLETE IF KNOWN	
Application Number	10/078,473
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

DW		BLACK, K., et al. "Double-fused 1.5 μm vertical cavity lasers with record high T_o of 132K at room temperature", article, Oct 1, 1998, pgs 1947-9, Vol. 34, No. 20, Electronics Letters.	
		BLUM, O., et al., "Electrical and optical characteristics of AlAsSb/BaAsSb distributed Bragg reflectors for surface emitting lasers", article, Nov 27, 1995, pgs 3233-5, Vol. 67, No. 22, Applied Physics Letters.	
		BLUM, O., et al., "Highly reflective, long wavelength AlAsSb/GaAsSb distributed Bragg reflector grown by molecular beam epitaxy on InP substrates", article, Jan 16, 1995, pgs 329-31, Vol. 66, No. 3, Applied Physics Letters.	
		BOUCART, J., et al., "1mW CW-RT monolithic VCSEL at 1.55 μm", article, Jun 1999, pgs 629-31, Vol. 11, No. 6., IEEE Photonic Technology Letters.	
		BOUCART, J., et al., "Metamorphic DBR and Tunnel-Junction Injection: A CW RT Monolithic Long-Wavelength VCSEL", May/June 1999, pp. 520-529, IEEE Journal of Selected Topics in Quantum Electronics, Vol. 5, No. 3	
		BOUCART, J., et al., "Optimization of the Metamorphic Growth of GaAs for long wavelength VCSELs", 1999, pp. 1015-1019, Journal of Crystal Growth 201/202.	
		CAMPBELL, J., et al., "Quantum dot resonant cavity photodiode with operation near 1.3 μm wavelength", article, Jul 17, 1997,pgs 1337-9, Vol. 33, No. 15, Electronics Letters.	
		CHANG, C., et al., "Parasitics and design considerations on oxide-implant VCSELs", article, Dec 2001, pgs 1274-6, Vol. 13, No. 12, IEEE Photonics Technology Letters.	
		CHERTOUK, H., "Metamorphic InAlAs/InGaAs HEMTs on GaAs substrates with a novel composite channels design", article, Jun 1996, pgs 273-5, Vol. 17, No. 6, IEEE Electron Device Letters.	
		CHOQUETTE, K., et al., "Room temperature continuous wave InGaAsN quantum well vertical-cavity lasers emitting at 1.3 μm", article, Aug 3, 2000, pgs 1388-90, Vol. 36, No. 16, Electronics Letters.	
		DEMEESTER, A.,. et al., "GaAs on InP: a promising material combination", article, March, 1989, pp. 44-48, Chemtronics Vol. 4 .	
		DOWD, P., et al., "Long wavelength (1.3 and 1.5 μm) photoluminescence from InGaAs/GaPAsSb quantum wells grown on GaAs", article, Aug 30, 1999, pgs 1267-9, Vol. 75, No. 9, Applied Physics Letters.	
		DUDLEY, J., et al., "Water fused long wavelength vertical cavity lasers", conference proceedings, Nov 15/8, 1993, pgs 560-1, LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting.	
		GOLDSTEIN, L., et al., "GaAlAs/GaAs metamorphic Bragg mirror for long wavelength VCSELs", article, February 5, 1998, Lov. 34, No. 3, Electronics Letters.	
		GOURLEY, F., et al., "Epitaxial semiconductor optical interference devices", invited paper, 1987, pgs 178-189, Vol. 792, SPIE.	
		GUDEN, M., et al., "Material parameters of quaternary III-V semiconductors for multiplayer mirrors at 1.55 μm wavelength", article, 1996, pgs 349-57, Vol. 4, Modeling Simulation Material Science Engineering, United Kingdom.	
		GUO, C., et al., "Theoretical Investigation of strained InGaAs/GaPAsSb type-II quantum wells on GaAs for long wavelength (1.3 um) optoelectronic devices", post-conference paper, Apr 1999, pgs 30-1, Dept of Electrical Engineering & Center for Solid State Electronics Research, ASU, Tempe, AZ.	
		GUY, D., et al., "Theory of an electro-optic modulator based on quantum wells in a semiconductor Otalon", conference paper, Mar 23/4, 1987, pgs 189-96, Quantum Well and Superlattice Physics.	
		HALL, E., et al., "Electrically-pumped, single-epitaxial VCSELs at 1.55 μm with Sb-based mirrors", article, Aug 5, 1999, pgs 1-2, Vol. 35, No. 16, Electronics Letters.	
		HALL, E., et al., "Increased lateral oxidation rates of AlInAs on InP using short-period superlattices", article, Jan 8, 2002, pgs 1100-4, Vol. 29, No. 9, Applied Physics Letters.	
		HALL, E., et al., "Selectively etched undercut apertures in AlAsSb-based VCSELs", article, Feb 2001, pgs 97-9, Vol. 13, No. 2, IEEE Photonics Technology Letters.	
		HEGBLOM, E., et al., "Small efficient vertical cavity lasers with tapered oxide apertures", article, Apr 30, 1998, pgs 895-6, Vol. 34, No. 9, Electronics Letters.	
		HEROUX, J., et al., "Optical investigation of InGaAsN/GaAs strained multi-quantum wells", Oct 1-3, 2001, pg 2, 20th North American Conference on Molecular Beam Epitaxy.	
↓		HONG, Y., et al., "Improving Ga(In)Nas properties by migration-enhanced epitaxy and superlattices", Jun 27, 2001, 43rd 2001 Electronic Material Conference, Session G, Paper G10.	

Examiner Signature		Date Considered	06/07/05

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COMPLETE IF KNOWN	
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First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
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Attorney Docket Number	H0002992

DW		HONG, Y., et al., "Growth of GaInNAs quaternaries using a digital allow technique", conference paper, Oct 01/3, 2001, pgs 1163-6, Journal of Vacuum Science and Technology B: Microelectronics and Nanometer Structures.	
		HUFFAKER, D., et al., "1.15 μm wavelength oxide-confined quantum-dot vertical-cavity surface-emitting laser", article, Feb 1998, pgs 185-7, Vol. 10, No. 2, IEEE Photonics Technology Letters.	
		HUFFAKER, D., et al., "1.3 μm room-temperature GaAs-based quantum-dot laser", Nov 2, 1998, pgs 2564-6, Vol. 73, No. 18, Applied Physics Letters.	
		IGA, K., "Semiconductor laser in the 21st century", California conference papers, Jan 22/4, 2001, pgs xi-xxv, Photodetectors: Materials and Devices VI.	
		JAYARAMAN, V., et al., "Uniform threshold current, continuous-wave, single mode 1300 nm vertical cavity lasers from 0 to 70°C", article, Jul 9, 1998, pgs 1405-7, Vol. 34, No. 14, Electronics Letters.	
		KIM, J., et al., "Epitaxially-stacked multiple-active-region 1.55 μm lasers for increased differential efficiency", article, May 31, 1999, pgs 3251-3, Vol. 74, No. 22, Applied Physics Letters.	
		KIM, J., et al., "Room-temperature, electrically-pumped multiple-active-region VCSELs with high differential efficiency at 1.55 μm", article, Jun 24, 1999, pgs 1-2, Vol. 35, No. 13, Electronics Letters.	
		KONDOW, M., et al., "A Novel Material of GaInNAs for Long-Wavelength-Range Laser Diodes with Excellent High-Temperature Performance", Extended Abstracts of the 1995 International Conference on Solid State Devices and Materials, Osaka, 1995, pp. 1016-1018.	
		KONDOW, M., et al., "GaInNAs: A Novel Material for Long-Wavelength-Range Laser Diodes with Excellent High-Temperature Performance", February 1996, Jpn. J. Appl. Phys., Vol. 35, pp 1273-1275	
		KOTAKI, Y., et al., "GaInAsP/InP surface emitting laser with two active layers", article, 1984, pgs 133-6, Extended Abstracts of the 16th (1984 International) conference on Solid State Devices and Materials.	
		KOYAMA, F., et al., "Room temperature CWS operation of GaAs vertical cavity surface emitting laser", article, Nov 1988, pgs 1089-90, Vol. E71, No. 11, The Transactions of the IEICE.	
		LARSON, J., et al., "GaInNAs-GaAs long-wavelength vertical-cavity surface-emitting laser diodes", article, Feb 1998, pgs 188-90, Vol. 10, No. 2, IEEE Photonics Technology Letters.	
		LEE, Y., et al., "Physics and nonlinear device applications of bulk and multiple quantum well GaAs", invited paper, 1987, pgs 128-133, SPIE Vol. 792 Quantum Well and Superlattice Physics (1987).	
		LI, J., et al., "Persistent photoconductivity in $Ga_{1-x}In_xN_yAs_{1-y}$", article, Sep 27, 1999, pgs 1899-1901, Vol. 75, No. 13, Applied Physics Letters.	
		LIVSHITS, E., "8W continuous wave operation of InGaAsN lasers at 1.3 μm", article, Aug 3, 2000, pgs 1381-2, Vol. 36, No. 16, Electronics Letters.	
		MIRIN, R., et al., "1.3 μm photoluminescence from InGaAs quantum dots on GaAs", article, Dec 18, 1995, pgs 3795-7, Applied Physics Letter 67 (25).	
		NAKAGAWA, S., et al., "1.55 μm InP-lattice-matched VCSELs with AlGaAsSb-AlAsSb DBRs", article, Mar/Apr 2001, pgs 224-30, Vol. 7, No. 2, IEEE Journal on Selected Topics in Quantum Electronics.	
		NAKAHARA, K., et al., "1.3 μm continuous-wave lasing operation in GaInNAs quantum-well lasers", article, Apr 1998, pgs 487-8, Vol. 10, No. 4, IEEE Photonics Technology Letters.	
		NAKAHARA, K., et al., "Continuous-wave operation of long-wavelength GaInNAs/GaAs quantum well laser", article, June 13, 1996, pp. 1585-1586, Vol. 32, No. 17, IEE Electronics Letters Online No: 19961039	
		NAONE, R., et al., "Tapered air apertures for thermally robust VCL structures", article, Nov 1999, pgs 1339-41, Vol. 11, No. 11, IEEE Photonics Technology Letters.	
		NELSON, D., et al., "Band nonparabolicity effects in semiconductor quantum wells", article, Feb 15, 1987, pgs 7770-7773, Vol. 35, No. 17, Rapid Communications.	
		OHNOKI, N., et al., "Superlattice AlAs/AlInAs-oxide current aperture for long wavelength InP-based vertical-cavity surface-emitting laser structure", article, Nov 30, 1998, pgs 3262-4, Vol. 73, No. 22, Applied Physics Letters.	
		ORTSIEFER, M., et al., "Submiliamp long-wavelength InP-based vertical-cavity surface-emitting laser with stable linear polarization", article, Jun 22, 2000, pgs 1124-6, Vol. 36, No. 13, Electronics Letters.	

Examiner Signature		Date Considered	06/07/06

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Application Number	10/078,473
Filing Date	2-21-02
First Named Inventor	Ho Ki Kwon
Group Art Unit	2828
Examiner Name	Dung T. Nguyen
Attorney Docket Number	H0002992

DV		PETERS, M., et al., "Realization and modeling of a pseudomorphic ($GaAs_{1-x}Sb_x$-In_y $Ga_{1-y}As$)/GaAs bilayer-quantum well", article, Oct 30, 1995, pgs 2639-41, Applied Physics Letter 67 (18).	
		PETERS, M., et al., "Band-gap engineered digital alloy interfaces for lower resistance vertical-cavity surface-emitting lasers, article, Dec 1993, pgs 3411-3, Vol. 63, No. 25, Applied Physics Letters.	
		PIPREK, J., et al., "Thermal comparison of long-wavelength vertical-cavity surface-emitting laser diodes", May 26, 1994, pgs 866-868, Vol. 30, No. 11, Electronics Letters.	
		PIPREK, J., et al., "Minimum temperature sensitivity of 1.55 μm vertical-cavity lasers at –30 nm gain offset", article, Apr 13, 1998, pgs 1814-6, Vol. 72, No. 15, Applied Physics Letters.	
		RAJA, M., et al., "Novel wavelength-resonant optoelectronic structure and its application to surface-emitting semiconductor lasers", article, Sep 1, 1988, pgs 1140-1142, Vol. 24, No. 18, Electronics Letters.	
		SCOTT, J., et al., "High efficiency submilliamp vertical cavity lasers with intracavity contacts", article, Jun 1994, pgs 678-80, Vol. 6, No. 6, IEEE Photonics Technology Letters.	
		SEKIGUCHI, S., et al., "Long wavelength GaInAsP/InP laser with n-n contacts using AlAs/InP hole injecting tunnel junction", article, Apr 15, 1999, pgs L443-5, Part 2, No. 4B, Japanese Journal of Applied Physics.	
		SHIMOMURA, H., et al. "High-reflectance ALPSb/GaPSb distributed Bragg reflector mirrors on InP grown by gas-source molecular beam epitaxy", article, December 20, 1993, Electronics Letters Online No: 19940230	
		STARCK, C., et al., "Fabrication of 1.55um oxidized VCSELs with top metamorphic GaAs/GaAlAs and bottom InP/InGaAsP Bragg reflectors", May 15, 1998, 10th International Conference on Indium Phosophide and Related Materials, pp. 369-372.	
		STARCK, C., "Long wavelength VCSEL with tunnel junction and metamorphic AlAs/GaAs conductive DBR", article, Jan 15, 1989, pgs 1871-83, Vol. 39, No. 3, Physics Review B.	
		SUGIMOTO, M., et al., "Surface emitting devices with distribut4ed Bragg reflectors grown by highly precise molecular beam epitaxy", article, 1993, pgs 1-4, Vol. 127, Journal of Crystal Growth.	
		STRASSBURG, M, "Growth and p-type doping of ZnSeTe on Inp, Technische Universitat Berlin, Institut fur Festkorperphysik, 10623 Berlin, Germany, National Technical University, Faculty of Applied Sciences, 15780 Athens, Greece, ICMOVPE XI WEB-BOOKLET MAY 17, 2002	
		UCHIDA, T., et al., "CBE grown 1.5 μm GaInAsP-InP surface emitting lasers", article, Jun 1993, pgs 1975-80, Vol. 29, No. 6, IEEE Journal of Quantum Electronics.	
		VAN DE WALLE, C. "Band lineups and deformation potentials in the model-solid theory", article, Jan 15, 1989, pgs 1871-83, Vol. 39, No. 3, Physical Review B.	
		WHITAKER, T., "Long wavelengths VCSELs move closer to reality", article, July 2000, pgs 65-7, Compound Semiconductor.	
		WIPIEJEWSKI. T. " Improved performance of vertical-cavity surface-emitting laser diodes with Au-plated heat spreading layer,REPRINTED from electronic letters, February 16, 1995, Vol. 31 No. 4 pp. 279-280	
		YAMADA, M., et al., "Low-threshold lasing at 1.3 μm from GaAsSb quantum wells directly grown on GaAs substrates", article, Apr 1998, pgs 149-50, IEEE, 0-7803-4947.	
		YAMADA, M., et al., "Room temperature low-threshold CW operation of 1.23 μm GaAsSb VCSELs on GaAs substrates", article, Mar 30, 2000, pgs 637-638, Vol. 36, No. 7, Electronics Letters.	
		YANG, X., et al., "High performance 1.3 μm InGaAsN:Sb/GaAs quantum well lasers grown by molecular beam epitaxy", journal article, Oct 1999, pgs 1484-7, Vol. 18, No. 3, Journal of Vacuum Science and Technology B Microelectronics and Nanometer Structures.	
		YANG, X., et al., "High-temperature characteristics of 1.3 μm in InGaAsN:Sb/GaAs multiple-quantum-well lasers grown by molecular-beam epitaxy", article, Feb 14, 2000, pgs 795-7, Vol. 76, No. 7, Applied Physics Letters.	
		YANG, X., et al., "InGaAsNSb/GaAs quantum wells for 1.55 μm lasers grown by molecular-beam epitaxy", article, pgs 4068-70, Vol. 78, No. 26, Applied Physics Letters.	
		YANO, M., et al., "Time-resolved reflection high energy electron diffraction analysis for atomic layer depositions of GaSb by molecular beam epitaxy", article, 1995, pgs 349-53, Vol. 146, Journal of Crystal Growth.	
		YUEN, W., et al., "High-performance 1.6 μm single-epitaxy top-emitting VCSEL", article, Jun 22, 2000, pgs 1121-3, Vol. 36, No. 13, Electronics Letters.	
V		Zeng, L. "Red-green-blue photopumped lasing from ZnCdMgSe/ZnCdSe quantum well laser structures grown on InP, Received March 10, 1998 accepted for publication, April 15, 1998, 1998 American Institute of Physics. (S0003-6951(98)02524-8)	

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Filing Dat	2/21/2002
First Named Inventor	Ho Ki Kwon
Art Unit	2828
Examiner Name	Dung T. Nguyen.
Attorney Docket Number	H0002992

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number: Number	Kind Code[2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
DV		US 5,659,180	A	08-19-1997	Shen et al.	
		US 5,679,963		10-21-1997	Klem et al.	
		US 6,052,398		4-18-2000	Brilouet et al.	
		US 5,753,050		5-1-1998	Charache et al.	
		US 5,800,630		9-1-1998	Vilela et al.	
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		US				
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DV		WO	01/63708	A2	8-30-2001	Boucart et al.		X
		EP	0 715 357	A1	6-5-1996	McDermott		X
								X

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DV		B.T. McDermott et al., Appl. Phys. Lett. 68,1386 (1996), "Growth and doping of GaAsSb via MOCVD for InP HBTs"	
		S.M. Bedair et al., J. Electron. Mater. 12,959 (1983), "Growth of GaAs(1-x)Sbx by OMVPE"	
		M.J. Cherng et al., J. Electron Mater. 13,799 (1984), "GaAs1-xSbx growth by OMVPE"	
		S.P. Watkins et al., J. Cryst. Growth 221, 59 (2000), "Heavily carbon-doped GaAsSb grown on InP for HBT applications"	

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